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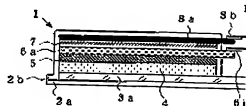
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(54) 【発明の名称】 エレクトロルミネッセンス

(57) 【要約】

【課題】 エレクトロルミネッセンスの駆動装置からの影響による電磁ノイズやエレクトロルミネッセンス自体に発生する電磁ノイズを低減する。

【解決手段】 透明基体 2 a 上に透明電極 3 a、発光体層 4、誘電体層 5、背面電極 6 a が積層され、前記透明電極 3 a に配設された透明電極用端子 3 b 及び背面電極 6 a に配設された背面電極用端子 6 b に駆動装置 1 〇側から交流電圧を印加することにより、前記発光体層 4 が発光するエレクトロルミネッセンスにおいて、前記背面



1 … 駆動装置
 2 a … 透明基体
 3 a … 透明電極
 3 b … 透明電極用端子

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【特許請求の範囲】

【請求項 1】 透明基体上に透明電極、発光体層、誘電体層、背面電極が積層され、前記透明電極に配設された透明電極用端子及び背面電極に配設された背面電極用端子に駆動装置側から交流電圧を印加することにより、前記発光体層が発光するエレクトロルミネッセンスにおいて、

前記背面電極の上に絶縁体層を挟んで導電膜を新たに設け、該導電膜を前記透明電極に導通させ、透明電極用端子から引き出される信号線を介して駆動装置側のグラウンドラインに接地したことを特徴とするエレクトロルミネッセンス。

【請求項 2】 透明基体上に透明電極、発光体層、誘電体層、背面電極が積層され、前記透明電極と背面電極との間に交流電圧を印加することにより、前記発光体層が発光するエレクトロルミネッセンスにおいて、前記透明電極とは反対側の透明基体上に透明導電膜を新たに設け、該透明導電膜を前記背面電極に導通させると共にグラウンドラインに接地したことを特徴とするエレクトロルミネッセンス。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、電磁ノイズの防止処置を施したエレクトロルミネッセンス（以下、ELという）の構造に関するものである。

【0002】

【従来の技術】携帯時計や携帯電話等をはじめとする電子機器において、表示部の視認性を向上させる目的から EL によるバックライトを用いたものが多い。従来、この種の EL としては、例えば図 6 に示すような構造のものが知られている。これはプラスチックフィルムからなる透明基体 2a の上に透明電極 3a（ITO 電極）を形成し、その上に発光体層 4、誘電体層 5、背面電極 6a を順次積層したのち、全体を透明な防湿シート 2b で被覆したものである。また、前記透明電極 3a 及び背面電極 6a の各端部には透明電極用端子 3b 及び背面電極用端子 6b がそれぞれ設けられ、この電極用端子 3b、6b からケーブル 9 を介して駆動装置 10 に接続されている。

【0003】このような構造からなる EL にあっては、

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は、例えば駆動装置 10 内に配設された側及び電源側にフェライト材を用いたクモコンモードのチョークコイルを設けて、する電磁ノイズを減衰させる方法がある；

【0004】

【発明が解決しようとする課題】しかし、電磁ノイズ減衰法にあっては、ノイズ発装置に対して有効なものであり、ある程度を低減させる効果があるものの、わずかにノイズが発生しており、これが駆動装置からケーブルを通じて影響を及ぼしている；電圧印加した時に EL 自体に発生する影響を受けていた。

【0005】そこで、本発明は、電磁ノイズを EL の構造体に新たに設け、さらには透明電極あるいは背面電極のどちらか一方に接地することで、EL に発生する電磁ノイズを低減することを目的とする。

【0006】

20 【課題を解決するための手段】上記課題に、本発明の請求項 1 に係る EL は、透明電極、発光体層、誘電体層、背面電極が積層され、前記透明電極に配設された透明電極用端子及び背面電極に配設された背面電極用端子に駆動装置側から交流電圧を印加することにより、前記発光体層が発光して、前記背面電極の上に絶縁体層を挟んで設け、該導電膜を前記透明電極に導通用端子から引き出される信号線を介してグラウンドラインに接地したことを特徴とする。

30 【0007】また、本発明の請求項 2 に係る EL は、透明基体上に透明電極、発光体層、誘電体層、背面電極が積層され、前記透明電極と背面電極との間に交流電圧を印加することにより、前記発光体層が発光して、前記透明電極とは反対側の透明基体上に透明導電膜を前記背面電極に導通させると共にグラウンドラインに接地したことを特徴とする。

【0008】

40 【発明の実施の形態】以下、添付図面に係る EL の実施形態を詳細に説明する。

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導電膜8aは、その端部に設けられた導電膜用端子8bから導通線11を介して透明電極3aに接続され、電気的に短絡状態となっている。さらに、透明電極用端子3bから引き出されたケーブル9aは透明電極3aを駆動する制御信号ラインに接続されていると同時に、駆動装置10のグラウンドラインにも接続されている。

【0009】次に上記構造からなるEL1の成形方法について説明する。まず、透明基体2a上に酸化インジウムを露でドーピングし、得られたITO (Indium Tin Oxide) 粉末を蒸着して透明な金属膜を形成する。次に、この金属膜をエッチングによって所望形状の透明電極パターンに形成し透明電極3a (ITO電極) とする。なお、上述のエッチングの他に、ITO粉末を透明な樹脂に混ぜ合わせて塗料化し、印刷方法によって形成することもできる。

【0010】発光体層4は、硫化亜鉛 (ZnS) の蛍光母体に微量の金属やハロゲン元素の付着剤を加えて塗料化し、これをスクリーン印刷によって上記透明電極3aの上に形成したものである。

【0011】該電体層5は、発光体層4を電気的な絶縁破壊から保護するため絶縁耐力の高い材質が使用される。このような材質としては、チタン酸バリウムがあり、これを分散した塗料で上記発光体層4の上にスクリーン印刷で形成する。特に、チタン酸バリウムを使用すると、光の反射率も高いので発光体層4で発光した光を表示面となる透明電極3a側へ反射させる反射板の役割も果たす。背面電極6aは、導電性の高い銀あるいは他の金属等の金属粉末を用い、上記電体層5の上に蒸着法で形成する。また、前記金属粉末及び黒鉛等を塗料化してスクリーン印刷で形成するか、あるいは金属箔を接着して形成してもよい。

【0012】絶縁体層7は、防湿性に優れたフッ素樹脂塗料をスクリーン印刷によって形成したものであるが、特にフッ素樹脂に限定されるものではなく、これ以外の絶縁性のある樹脂でもよい。

【0013】導電膜8aは、導電性の良い金属薄層が好ましく、例えばアルミニウムの薄板を接着したものを利用されるが、特にこれに限定されるものではない。また、形成方法としては金属の薄板を貼り付けたもの、他、蒸着によって金属薄層を形成してもよい。最後に、

とは反対側の透明基体2a上に透明導電膜を設けた構造となっている。この実施例で、3が透明基体2a側に設けられるために、その光の放射を妨げないように、光透過が必要である。なお、この透明導電膜1aと同一方法で形成される。

【0015】前記透明電極3aには透明な導電膜6aに背面電極6aにそれぞれ設けられる。そして、各電極用端子3bに延びるケーブル9a、9bによって駆動され、前記透明電極3aと背面電極6aに印加される。また、前記透明導電膜1aに設けられた透明導電膜用端子14を介して背面電極6aに接続され、電気的に接続されている。さらに、背面電極用端子6aに延びるケーブル9aは背面電極6aを駆動ラインに接続されていると同時に、駆動装置10のグラウンドラインにも接続されている。

【0016】なお、第1実施例における第2実施例における透明導電膜13は、極めて形成されているものに限らず、スリット、蛇の字状等の形状であっても適用可能である。

【0017】【実施例】図3乃至図5は、上記第1実施例の電圧ノイズの発生を、従来構造のEL1である。各グラフとも縦軸に電圧強度 (mV)、横軸に周波数 (MHz) を取り、平方方向に発生する電圧ノイズ (H) と垂直な電圧ノイズ (V) とをグラフ上に表し、また、情報処理装置等電圧降下に関する (VCCI Class1 (3m))、また、また装置及び測定器のマーキング対象自体の規格値を点検 (Margin) する。なお、電圧ノイズの測定装置はAD社製のEMI試験装置を使用し、周囲温度 (37%) 等の測定条件はすべて同一である。

【0018】(実施例1) 電圧暗室に於いて本発明のEL1を駆動装置10と共にケーブルを回転させながら電圧降下 (DC3.3V) に印刷し、EL1を発光させた状態

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ノイズを測定するために、上記実施例1と同様の手段で実験を行ない、電源電圧(DC3.0V)を駆動装置10に印加してE1が発光した時の電磁ノイズを測定した。図5はその時の水平方向に発生する電磁ノイズ(H)と垂直方向に発生する電磁ノイズ(V)を表わしたものである。

【0021】次に、上記図3乃至図5の実験データに基づいて説明する。図4における電界強度は、E1を点灯していない状態のものであるから、E1自体が発する電磁ノイズではなく、周囲環境の電界強度もしくは測定器の誤差による電磁ノイズである。また、図3と図4とを比較すると、40~50MHz付近で垂直方向の電界強度の違いが僅かに発生しているが、その以外は全く同一のカーブを描いており、また電界強度も略同じ数値を示している。このことから、所定の電圧をかけてE1を点灯したときは、40~50MHz付近で駆動装置10からの電磁ノイズが発生するが、その量はごくわずかであることが確認でき、またVCC1規格値(Margin)を余裕でクリアしている。

【0022】これに対して、図5に表わされた従来例では240MHz以下で水平方向の電界強度と垂直方向の電界強度のカーブが、図3における本発明のカーブとは大きくかけ離れており、しかも何れのカーブの数値も図3のカーブの数値より非常に大きくなっている。このことより、水平及び垂直方向とも電磁ノイズが非常に大きく増幅されていることが確認できる。また、数個所の周波数領域でVCC1規格値(Margin)を超えている。

【0023】なお、上記実施例はE1について行なったものであるが、E12についてもE1と同様の結果を得ることができた。

【0024】

【発明の効果】以上説明したように、本発明に係るE1によれば、従来のE1の構成体に金属膜等による導電膜や透明導電膜を新たに設けると共に、これら導電膜や透明導電膜と透明電極あるいは背面電極の

を短絡し、透明電極用端子あるいは背面引き出されたケーブルを介して駆動装置インに接地させることでノイズ対策とし、筐等の外部から発生する電磁ノイズや電磁ノイズを前記導電膜や透明導電膜遮断でき、電磁ノイズの低減化が図られる。

【図面の簡単な説明】

- 19 【図1】本発明に係るE1の第1実施例。
【図2】本発明に係るE1の第2実施例。
【図3】第1実施例に係るE1を点灯させたときの電磁ノイズの測定図である。
【図4】第1実施例に係るE1を点灯したときの電磁ノイズの測定図である。
【図5】従来構造のE1を点灯させたときの電磁ノイズの測定図である。

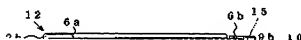
【図6】従来のE1の断面図である。

【符号の説明】

- 1 E1
2 a 透明基体
3 a 透明電極
3 b 透明電極用端子
4 発光体層
5 誘電体層
6 a 背面電極
6 b 背面電極用端子
7 絶縁体層
8 a 導電膜
8 b 導電膜用端子
10 駆動装置
12 E1
13 透明導電膜

【図2】

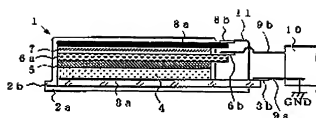
【図6】



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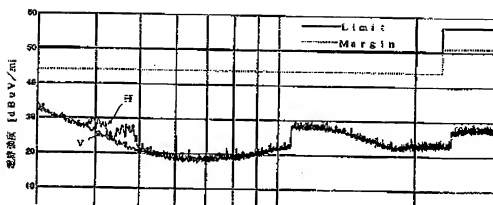
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【図1】



- 1 ... 基板
- 2a ... 基板
- 3a ... 発光層
- 3b ... 発光層
- 4 ... 発光層
- 5 ... 発光層
- 6a ... 発光層
- 6b ... 発光層
- 7 ... 発光層
- 8a ... 発光層
- 8b ... 発光層
- 10 ... 発光層
- 11 ... 発光層

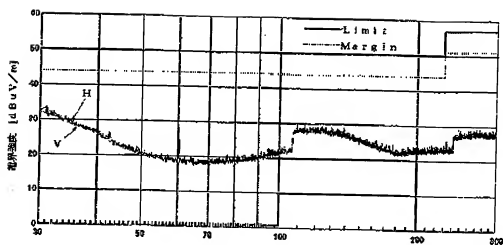
【図3】



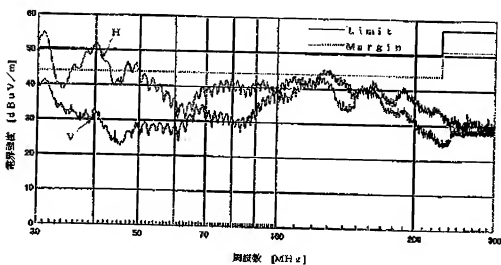
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【図4】



【図5】



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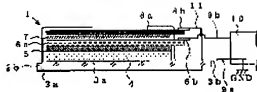
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(54) ELECTROLUMINESCENT DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To reduce electromagnetic noise due to an effect of a driving device for electroluminescent device as well as electromagnetic noise generated in the electroluminescent device itself.

SOLUTION: In an electroluminescent device comprising a transparent electrode 3a, an light emitting layer 4, a dielectric layer 5 and a back electrode 6a layered on a transparent substrate 2a, and emitting light from the light emitting layer 4 by an alternating-current voltage applied from the side of a drive device 10 to a transparent-electrode terminal 3b disposed on the transparent electrode 3a and to a back-electrode terminal 6b disposed on the back electrode 6a, a conductive film 8a is newly provided on the back electrode 6a with an insulator layer 7 sandwiched therebetween, and the conductive film 8a is caused to be conducted to the transparent electrode 3a and grounded to a ground line on the driving device 10 side, via a signal wire led out from the transparent-electrode terminal 3b.



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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] this invention -- electromagnetism -- it is related with the structure of electroluminescence (henceforth EL) where the prevention measures of a noise were taken.

[0002]

[Description of the Prior Art] There are many things using the back light by EL from the purposes which raise the visibility of a display including electronic equipment, such as watch and a cellular phone. Conventionally, as this kind of EL, the thing of structure as shown, for example in drawing 6 is known. After this forms transparent electrode 3a (ITO electrode) on transperance base 2a which consists of plastic film and carries out the laminating of the emitter layer 4, a dielectric layer 5, and the back plate 6a one by one on it, it covers the whole with transparent moisture-proof sheet 2b. Moreover, terminal 3for transparent electrodes b and terminal 6b for back plates are prepared in each edge of said transparent electrode 3a and back plate 6a, respectively, and it connects with the driving gear 10 through the cable 9 from these terminals 3b and 6b for electrodes.

[0003] If it is in EL which consists of such structure, EL molecule in the emitter layer 4 is excited by impressing alternating voltage between transparent electrode 3a and back plate 6a, and luminescence appears. since [by the way,] the alternating voltage to impress is used in general in [electrical-potential-difference] about 35-150V and the inverter transformed to alternating voltage is arranged in the driving gear 10 -- an inverter -- electromagnetism -- the generation source of a noise -- becoming -- easy -- the drive circuit board and an interconnection cable -- leading -- electromagnetism -- a noise affects EL and there is a possibility of causing the turbulence of the image of the liquid crystal display section by which arrangement use is carried out in piles with EL. the electromagnetism which makes an inverter a generation source conventionally -- the electromagnetism which prepares the choke coil in in the clamp core and the common mode which ferrite material was used for the output side [of the circuit board arranged, for example in a driving gear 10], and power-source side as an approach of stopping a noise as much as possible, and is generated in the EL side -- there was a method of attenuating a noise.

[0004]

[Problem(s) to be Solved by the Invention] however, above-mentioned electromagnetism -- the driving gear which serves as a noise generation source if it is in a noise vibration decay method -- receiving -- an effective thing -- it is -- a certain extent -- electromagnetism -- although it is effective in reducing a noise, while small -- electromagnetism -- the noise had occurred and this had affected EL connected from a driving gear through the cable. moreover, the electromagnetism generated in the EL itself when electrical-potential-difference impression is carried out at EL -- it was influenced also by the noise.

[0005] then, the electromagnetism which this invention is newly preparing the electric conduction film with the electromagnetic-shielding effectiveness in the structure of EL, and short-circuiting and grounding either this electric conduction film, a transparent electrode or a back plate further, and is generated in EL -- it aims at reducing a noise.

[0006]

[Means for Solving the Problem] In order to solve the above-mentioned technical problem, EL concerning claim 1 of this invention By carrying out the laminating of a transparent electrode, an emitter layer, a dielectric layer, and the back plate at a transparency base top, and impressing alternating voltage to the terminal for back plates arranged by the terminal for transparent electrodes and back plate which were arranged by said transparent electrode from a driving gear side In EL with which said emitter layer emits light, on both sides of an insulator layer, newly prepare the electric conduction film on said back plate, said transparent electrode is made to flow through this electric conduction film, and it is characterized by grounding to the ground line by the side of a driving gear through the signal line pulled out from the terminal for transparent electrodes.

[0007] Moreover, EL concerning claim 2 of this invention is characterized by grounding said transparent electrode to a ground line while it newly prepares the transparency electric conduction film on the transparency base of the opposite side and made said back plate flow through this transparency electric conduction film in EL with which said emitter layer emits light by carrying out the laminating of a transparent electrode, an emitter layer, a dielectric layer, and the back plate on a transparency base, and impressing alternating voltage between said transparent electrodes and back plates.

[0008]

[Embodiment of the Invention] Hereafter, the gestalt of operation of EL applied to this invention based on an accompanying drawing is explained to a detail. Drawing 1 shows the 1st example of EL concerning this invention. This EL1 carries out the laminating of transparent electrode 3a, the emitter layer 4, a dielectric layer 5, back plate 6a, the insulator layer 7, and the electric conduction film 8a one by one on transparency base 2a which consists of plastic film, and has structure which covered the whole with transparent moisture-proof sheet 2b at the end. And terminal 3b for transparent electrodes is prepared in said transparent electrode 3a, terminal 6b for back plates is prepared in said back plate 6a, each is connected to a driving gear 10 by Cables 9a and 9b from each terminals 3b and 6b for electrodes, and alternating voltage is impressed between said transparent electrode 3a and back plate 6a. Moreover, it connects with transparent electrode 3a through the flow line 11 from terminal 8f for electric conduction film b prepared in the edge, and said electric conduction film 8a is in the short circuit condition electrically. Furthermore, cable 9a pulled out from terminal 3f for transparent electrodes b is connected also to the ground line of a driving gear 10 while connecting with control signal Rhine which drives transparent electrode 3a.

[0009] Next, the shaping approach of EL1 which consists of the above-mentioned structure is explained. First, on transparency base 2a, indium oxide is doped with tin, the obtained ITO (Indium Tin Oxide) powder is vapor-deposited, and a transparent metal membrane is formed. Next, by etching, this metal membrane is formed in the transparent electrode pattern of a request configuration, and is set to transparent electrode 3a (ITO electrode). In addition, the ITO powder other than above-mentioned etching can be mixed with transparent resin, and can be coating-ized, and it can also form by the printing approach.

[0010] The emitter layer 4 adds and coating-izes the metal of a minute amount, and the activator of a halogen to the fluorescence parent of zinc sulfide (ZnS), and forms this on the above-mentioned transparent electrode 3a by screen-stencil.

[0011] In order that a dielectric layer 5 may protect the emitter layer 4 from electric dielectric breakdown, the quality of the material with high withstand voltage is used. As such the quality of the material, there is barium titanate and it forms by screen-stencil on the above-mentioned emitter layer 4 in the coatings which distributed this. If barium titanate is used especially, the reflection factor of light and the role of the reflecting plate made to reflect in the transparent electrode 3a side used as the screen the light which emitted light in the emitter layer 4 since it was high will be played. Back plate 6a is formed with vacuum deposition on the above-mentioned dielectric layer 5 using metal powder, such as conductive high silver or other metals. Moreover, said metal powder, graphite, etc. may be coating-ized, and it may form by screen-stencil, or a metallic foil may be pasted up and formed.

[0012] Although the insulator layer 7 forms the fluororesin coating excellent in dampproofing by screen-stencil, it may not be limited to especially a fluororesin and insulating resin other than this is sufficient

as it.

[0013] Although the conductive good metal thin film of electric conduction film 8a is desirable, for example, what pasted up the sheet metal of aluminum is used, it is not limited to especially this. Moreover, although metaled sheet metal was stuck as the formation approach, a metal thin film may be formed by others and vacuum evaporation. At the end, the whole is covered with transparent moisture-proof sheet 2b, it closes by adhesion or thermocompression bonding, and a whole configuration is done. As for this moisture-proof sheet 2b, the insulating effectiveness and the moisture-proof effectiveness are established for the purpose.

[0014] Drawing 2 shows the 2nd example of EL concerning this invention. Although the whole is covered with transparent moisture-proof sheet 2b while this EL12 carries out the laminating of transparent electrode 3a, the emitter layer 4, a dielectric layer 5, and the back plate 6a one by one like said example on transparency base 2a which consists of plastic film, unlike said example, transparent electrode 3a has structure which newly formed the transparency electric conduction film 13 on transparency base 2a of the opposite side. In this example, since the transparency electric conduction film 13 is formed in the transparency base 2a side, it is required to have light transmission nature so that the light emission from the emitter layer 4 may not be barred. In addition, this transparency electric conduction film 13 is formed by the same approach as transparent electrode 3a.

[0015] Terminal 3b for transparent electrodes is prepared in said transparent electrode 3a, and terminal 6b for back plates is prepared in said back plate 6a, respectively. And the cables 9a and 9b prolonged from each terminals 3b and 6b for electrodes connect with a driving gear 10, and alternating voltage is impressed between said transparent electrode 3a and back plate 6a by them. Moreover, it connects with back plate 6a through the flow line 15 from the terminal 14 for transparency electric conduction film prepared in the edge, and said transparency electric conduction film 13 is in the short circuit condition electrically. Furthermore, cable 9a pulled out from terminal 6b for back plates b is connected also to the ground line of a driving gear 10 while connecting with control signal Rhine which drives back plate 6a. [0016] In addition, the whole surface is not restricted to what is formed by poor ***** , but the transparency electric conduction film 13 in electric conduction film 8a in the 1st example and the 2nd example is applicable even if it is configurations, such as the shape of the shape of a stripe, and a grid, and the shape of a child of a tortoise.

[0017]

[Example] the electromagnetism of EL which drawing 3 thru/or drawing 5 require for the 1st example of the above -- generating of a noise is conventionally compared with EL of structure. the electromagnetism which field strength (dBuV/m) is taken along an axis of ordinate, and each graph takes a frequency (MHz) along an axis of abscissa, and generates it horizontally to EL -- the electromagnetism generated to a noise (H) and a perpendicular direction -- a noise (V) is expressed on a graph. Moreover, it is a continuous line (Limit) about the international value of standard (VCCI Class1 (3m)) about electromagnetic interferences, such as an information processor, and the dotted line (Margin) has shown the value of standard of the measuring object except a part for the margin of equipment and a measuring instrument itself. in addition, electromagnetism -- the measuring device of a noise used the EMI testing device made from ADVANTEST, and all Measuring conditions, such as ambient temperature (22 degrees C) and humidity (37%), were set up identically.

[0018] (Example 1) the electromagnetism which EL1 and a driving gear 10 emit in the condition of having installed EL1 of this invention with the driving gear 10 on the table, having impressed supply voltage (DC3.0V) to the driving gear 10 in the anechoic chamber, rotating a table, and having made EL emitting light -- the noise was measured. the electromagnetism which generates drawing 3 horizontally - - the electromagnetism generated to a noise (H) and a perpendicular direction -- a noise (V) is expressed on a graph.

[0019] (Example 2) the electromagnetism which peripheral devices, such as equipment and a measuring instrument, emit in the condition that EL does not emit light to EL1 installed on the above-mentioned table, without impressing supply voltage (DC3.0V) to a driving gear 10 -- the noise was measured. the electromagnetism which generates drawing 4 to the horizontal direction at that time -- the

electromagnetism generated to a noise (H) and a perpendicular direction -- a noise (V) is expressed.
[0020] (Example of a comparison) the electromagnetism which EL of structure generates conventionally -- electromagnetism in order to measure a noise, when it experiments with the same means as the above-mentioned example 1, supply voltage (DC3.0V) is impressed to a driving gear 10 and EL emits light -- the noise was measured. the electromagnetism which generates drawing 5 to the horizontal direction at that time -- the electromagnetism generated to a noise (H) and a perpendicular direction -- a noise (V) is expressed.

[0021] Next, it explains based on the experimental data of above-mentioned drawing 3 thru/or drawing 5. the electromagnetism which the EL itself emits since the field strength in drawing 4 is a thing in the condition of having not turned on EL -- the electromagnetism by the field strength of the perimeter environment instead of a noise, or the error of a measuring instrument -- it is a noise. moreover -- although the difference in vertical field strength will have occurred slightly near 40-50MHz if drawing 3 is compared with drawing 4 -- the curve completely same except the -- drawing -- **** -- moreover, field strength -- abbreviation -- the same numeric value is shown. the time of turning on EL from this, having applied the predetermined electrical potential difference -- near 40-50MHz -- the electromagnetism from a driving gear 10 -- although a noise occurs, the amount came out very only, and could check a certain thing, and has cleared the VCCI value of standard (Margin) in allowances.

[0022] On the other hand, in the conventional example expressed to drawing 5, below 240MHz, the curve of this invention [in / in the curve of horizontal field strength and vertical field strength / drawing 3] is greatly different widely, and, moreover, any numeric value of a curve is very larger than the numeric value of the curve of drawing 3. this -- a horizontal and a perpendicular direction -- electromagnetism -- it can check that the noise is amplified very greatly. Moreover, it is over the VCCI value of standard (Margin) in several frequency domains.

[0023] In addition, although the above-mentioned example was performed about EL1, the result same also about EL12 as EL1 was able to be obtained.

[0024]

[Effect of the Invention] As explained above, while newly preparing the electric conduction film and transparence electric conduction film by a metal membrane etc. in the construct of the conventional EL according to EL concerning this invention Either these electric conduction film, the transparence electric conduction film, a transparent electrode or a back plate is short-circuited. Since it considered as the cure against a noise by grounding the ground line in a driving gear through the cable pulled out from the terminal for transparent electrodes, or the terminal for back plates the electromagnetism generated from the outside, such as a driving gear, -- the electromagnetism generated in a noise or the EL itself -- a noise -- said electric conduction film and the transparence electric conduction film -- effective -- it can intercept -- electromagnetism -- it is effective in reduction-ization of a noise being attained.

[Translation done.]

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CLAIMS

[Claim(s)]

[Claim 1] By carrying out the laminating of a transparent electrode, an emitter layer, a dielectric layer, and the back plate at a transparence base top, and impressing alternating voltage to the terminal for back plates arranged by the terminal for transparent electrodes and back plate which were arranged by said transparent electrode from a driving gear side In the electroluminescence to which said emitter layer emits light, the electric conduction film is newly prepared on both sides of an insulator layer on said back plate. Electroluminescence characterized by grounding this electric conduction film to the ground line by the side of a driving gear through the signal line which said transparent electrode is made to flow and is pulled out from the terminal for transparent electrodes.

[Claim 2] It is electroluminescence characterized by grounding to a ground line while said transparent electrode newly prepares the transparence electric conduction film on the transparence base of the opposite side in the electroluminescence to which said emitter layer emits light and making said back plate flow through this transparence electric conduction film by carrying out the laminating of a transparent electrode, an emitter layer, a dielectric layer, and the back plate on a transparence base, and impressing alternating voltage between said transparent electrodes and back plates.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the sectional view of the 1st example of EL concerning this invention.

[Drawing 2] It is the sectional view of the 2nd example of EL concerning this invention.

[Drawing 3] the electromagnetism at the time of making EL concerning the 1st example turn on -- it is the measurement Fig. of a noise.

[Drawing 4] the electromagnetism when switching off EL concerning the 1st example -- it is the measurement Fig. of a noise.

[Drawing 5] the electromagnetism at the time of making EL of structure turn on conventionally -- it is the measurement Fig. of a noise.

[Drawing 6] It is the sectional view of the conventional EL.

[Description of Notations]

1 EL

2a Transparence base

3a Transparent electrode

3b The terminal for transparent electrodes

4 Emitter Layer

5 Dielectric Layer

6a Back plate

6b The terminal for back plates

7 Insulator Layer

8a Electric conduction film

8b The terminal for electric conduction film

10 Driving Gear

12 EL

13 Transparence Electric Conduction Film

[Translation done.]

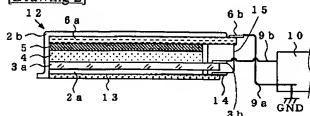
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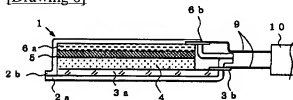
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DRAWINGS

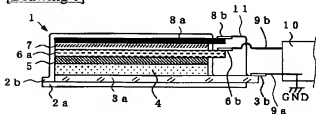
[Drawing 2]



[Drawing 6]

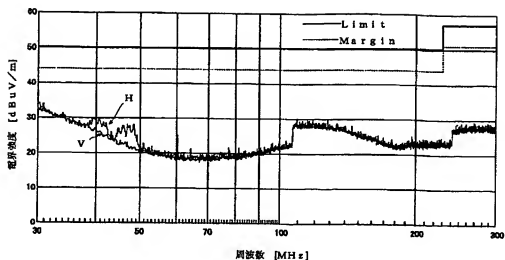


[Drawing 1]

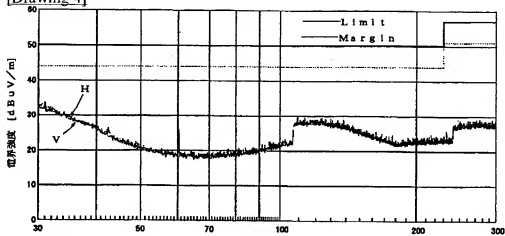


- 1 ...EL
- 2a...透明基体
- 3a...透明電極
- 3b...透明電極用端子
- 4 ...発光体層
- 5 ...断電体層
- 6a ...背面電極
- 6b...背面電極用端子
- 7 ...絶縁体層
- 8a...導電膜
- 8b...導電膜用端子
- 10...駆動装置
- 11...導線線

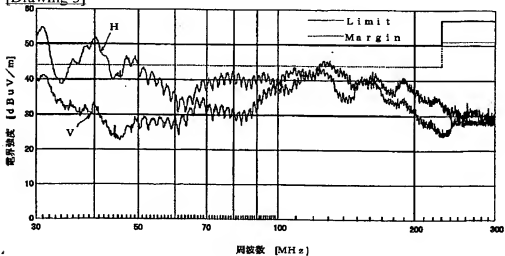
[Drawing 3]



[Drawing 4]



[Drawing 5]



[Translation done.]